OGGETTI SOTTOPOSTI A VERIFICHE / *ITEMS UNDER TESTS*	
Descrizione *Description*	Display used for information system
Modello base *Basic Model type*	Compact TFT 32" Outdoor Code 993201900100
Modello derivato *Derived Model type*	D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z0 D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z1
Identificativo interno *Storage No.*	190883 (sampled by customer)
Richiedente *Applicant*	Aesys S.p.A.
Indirizzo *Address*	Via Pastrengo, 7/C I-24068 Seriate (BG) - Italia
Prove effettuate presso *Test carried out by*	TÜV Rheinland Italia Srl Via E. Mattei, 3 – 20010 Pogliano Milanese (Italy)
Norme di riferimento *Reference Standards*	**EN IEC 62311:2020**
Scopo delle prove *Scope of the tests*	To verify the compliance with the following clauses of reference standards • See summary of testing *TEST SUMMARY* section
Risultati di prova *Test Results*	**COMPLIANT**

Data ricevimento campioni *Date of samples receiving*	30/09/2019		
Data inizio prove *Date of tests start*	01/10/2019	**Data fine prove** Date of tests end	23/10/2019
Rapporto composto da *Test report composed by*	16 Pages		

Provato da / Tested by *(name + signature)*	**Approvato da / Approved by** *(name + signature)*
Andrea Bortolotti (*Laboratory Technician*)	Roberto Radice (Reviewer)

The results referred in this report are only relevant to the samples tested and described in this report.
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Compliance with test requirements recorded in this technical report does not give presumption of compliance to all requirements by reference standard.

RELEASE CONTROL RECORD		
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
28118771 007	Original release	02/12/2020

OGGETTO SOTTOPOSTO A PROVE / *ITEM UNDER TEST*

Descrizione *Description*	Display used for information system
Marca *Brand*	aesys
Costruttore *Manufacturer*	Aesys S.p.A.
Modello base *Basic Model type*	Compact TFT 32" Outdoor Code 993201900100
Dati di targa *Ratings*	
Classificazione *EUT classification*	---
Massima frequenza di clock *Maximum clock frequency*	---
Installazione *Standing*	Wall / Ceiling / Embedded / Pole support

PRODUCT DESCRIPTION

This display can be part, with any other panels similar or of different types, of a system aimed at informing users in transit on rail vehicles of information to travelers on the railway lines, or general information.

Mechanical	
Size:	TFT 32"
Dimensions:	836 (L) x 530 (H) x 160 (D) mm
Estimated Weight	45Kg

Finish Front :	Aluminum, RAL Range, 50% GLOSS, not reflecting MAT, powder coating		
Finish Rear :	Aluminum, RAL Range, 50% GLOSS, not reflecting MAT, powder coating		
Protection grade:	IP55		
Front protection:	Antireflective (both side) Laminated Tempered glass with UV and IR protection (compliance to IK08 5J according to the EN62262)		
Lock system:	Hinged door, polyurethane bi-component vulcanized gasket; Special anti-vandal locks		
Interfaces:	1x Power Supply 1x RJ45 Data Line 1x M6 Additional ground interface 3x SMA connector (for Wireless 2G/3G/4G version, RF antenna & Wifi) 1x Audio Output (for further details see the attached mechanical drawing)		
Fixing points:	Monitor : Vesa standard 200x200mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor : Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)	Monitor : Vesa standard 400x400mm, 4xM8 Female closed holes (for further details see the attached mechanical drawing)
Other:	Mechanical housing compliant to IK10 20J according to the EN62262		

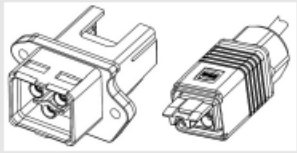
Electrical	
Size	TFT 32"
Input power supply voltage:	Nominal 220-240V$_{AC}$
	Range: 198V$_{AC}$ ÷ 264V$_{AC}$
Input power supply frequency range:	50/60Hz
Protections:	Overload, overvoltage, over temperature
Power Consumption:	Typ.: 130W (@Brightness 70%)
	Max.: 165W (@ Brightness 100%)
	Max.: 325W (@ Brightness 100%, Heating ON)

Environmental	
Operating temperature:	-25° ÷ 50° C when installed with Suncover / Sunshade
Thermal management:	At high temperature: - Automatic TFT-LCD matrix brightness linear derating down to maximum 50% with the increase of the environmental temperature - TFT-LCD matrix and PC switched OFF when the highest temperature limit is reached
	At low temperature: - display is switched off when the lowest temperature limit is reached
Operating humidity:	10 % ÷ 95 % R.H. without condensation
Storage temperature:	-20° ÷ 60° Celsius – Ambient temperature 10% ÷ 95% - R.H. at this conditions: - till +40°C @90% R.H. - till +50°C @60% R.H. - till +60°C @40% R.H.
Cooling system:	Direct air exchange with the outside by special filter
Heating system:	Installed
Temperature Sensor	Installed
Light Sensor	Installed
Acceleration Sensor	*Upon request*

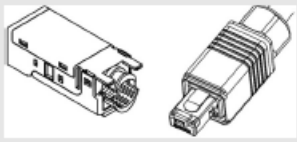
Data Communication	
Type of communication:	Copper LAN Ethernet 10/100/1000 Base TX
Protocol type:	Different protocol types supported (according to the software player hosted), SNMP protocol for diagnostic data
Other:	*Upon request:* *- Built-in LAN Ethernet 10/100/1000Base TX to 10/100/1000Base FX Media converter (multimode)* *- Wireless 2G/3G/4G* *- Wi-fi* *(for further details refer to the commercial offer)*
Connectors	
Power supply:	1x Harting PushPull Power 2/0, panel feed-through and connector, 3-poles (2+PE)
Data line:	1x Harting PushPull RJ45 Technology, RJ45-panel jack feed-through
Audio output:	1x Cable Gland
Antenna:	3x SMA Connector
Ground interface:	1x M6 male ground point

Optical specifications (matrix module)	
Size:	TFT 32"
Format:	16:9
Type:	Normally black
(*) Active area:	698.4 (H) x 392.85 (V) mm
(*) Pixel pitch:	0.36375 x 0.36375 mm x RGB
Pixel format:	1920 (H) x 1080 (V) (Native resolution)
Colour depth:	16.7M colors
Luminance:(on white colour)	1.000 cd/m^2 (typ.) @ Center point
Contrast ratio:	4000 : 1 typ. (with dimming)
Viewing angle (CR > 10):	R/L 178° (typ.) – U/D 178° (typ.)
Response time:	8ms (Typ., Grey-to-Grey)
Backlight Technology:	LED

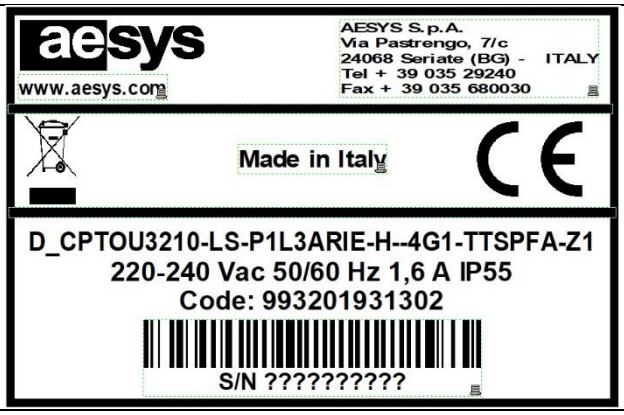
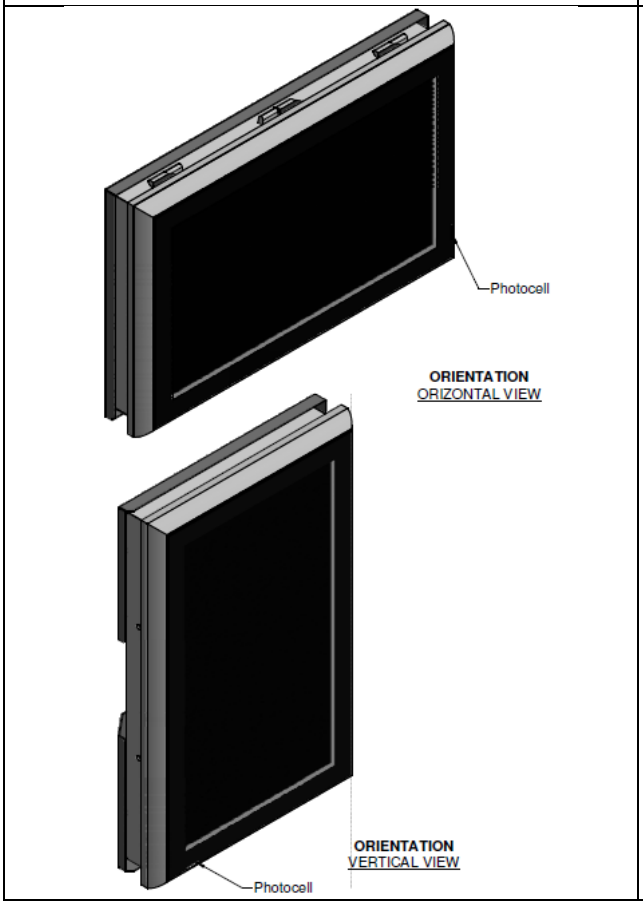
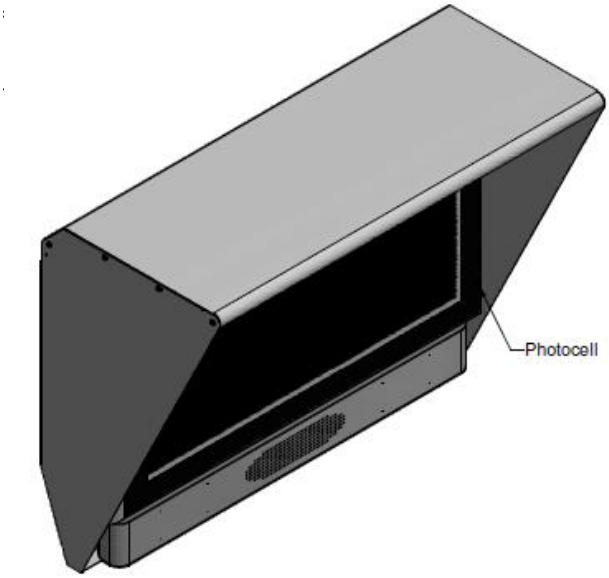
Power Supply

Connector Type	Pin #	Signal	Description
 Harting Push pull V4 Power plug	1	L	Line 230Vac power input
	2	N	Neutral 230Vac power input
	3	GND	Ground

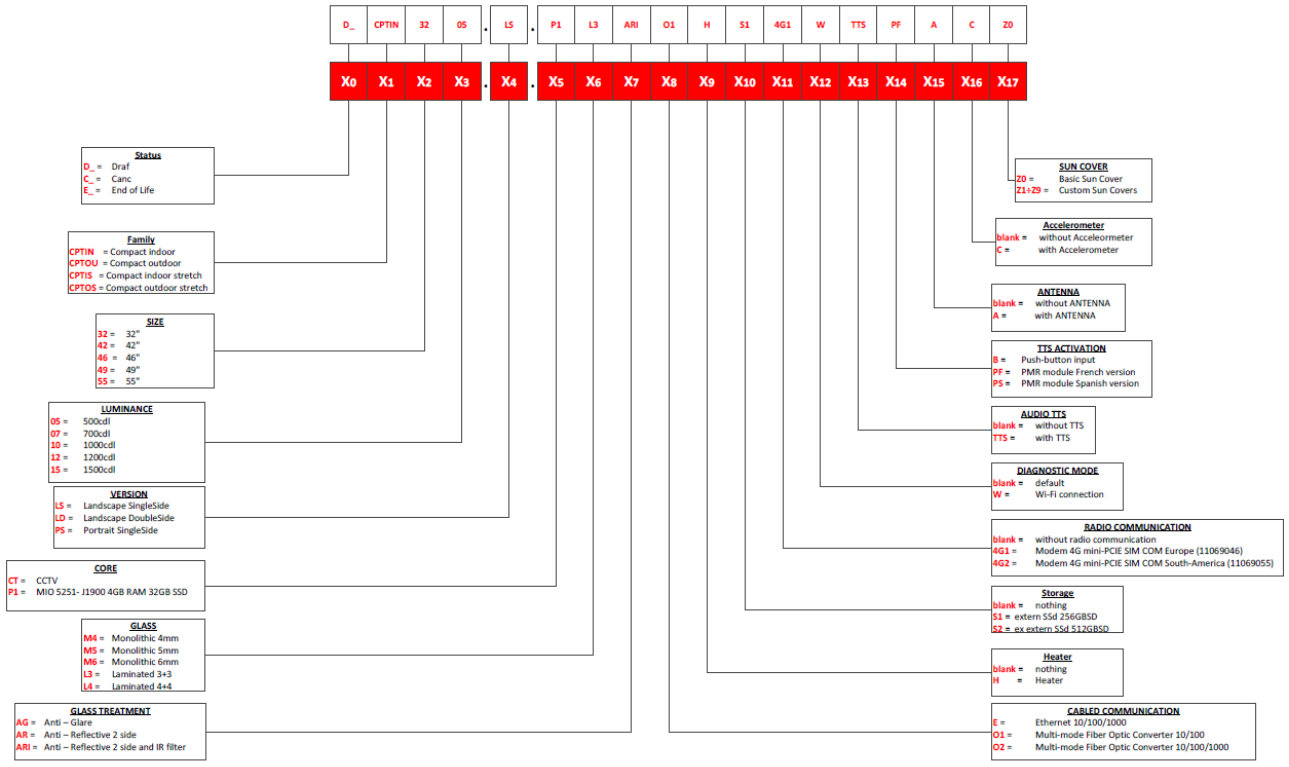
Ethernet data line

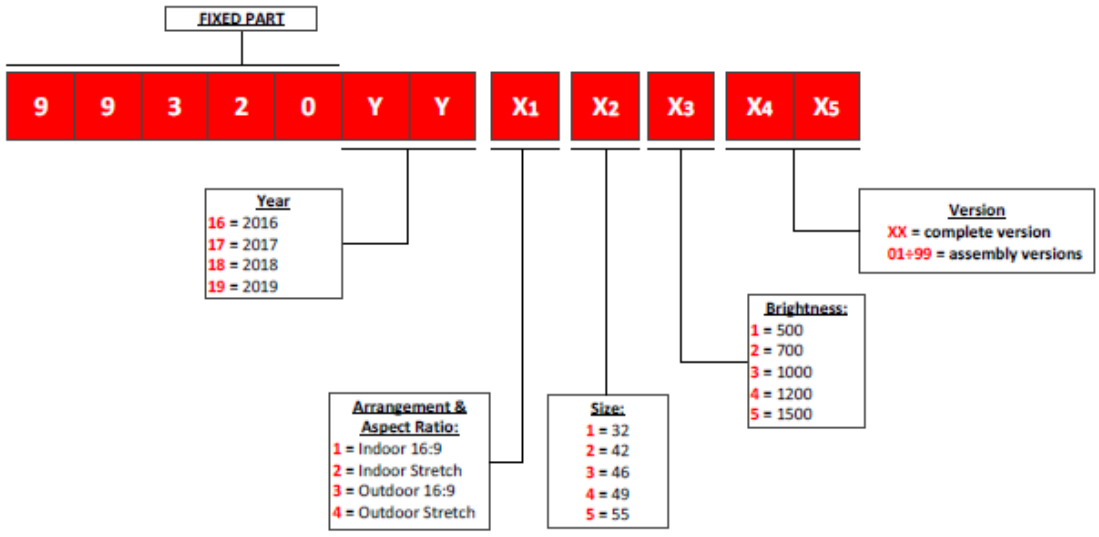
Connector Type	Pin #	Signal	Description
 Harting Push pull V4 RJ45	1	TX+	Transmit Data +
	2	TX-	Transmit Data -
	3	RX+	Receive Data +
	4	BI_DC+ (GHz)	DC+ for GBe
	5	BI_DC- (GHz)	DC- for GBe
	6	RX-	Receive Data -
	7	BI_DD+ (GHz)	DD+ for GBe
	8	BI_DD- (GHz)	DD- for GBe

Derived model(s)

D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z0	D_CPTOU3210-LS-P1L3ARIE-H- - 4G1-TTSPFA-Z1
	
Commercial name	Sun cover
	

Speaking code


D_ CPTIN 32 05 . LS . P1 L3 ARI O1 H S1 4G1 W TTS PF A C Z0
X0 X1 X2 X3 . X4 . X5 X6 X7 X8 X9 X10 X11 X12 X13 X14 X15 X16 X17
Status
D_ = Draf
C_ = Canc
E_ = End of Life
Family
CPTIN = Compact indoor
CPTOU = Compact outdoor
CPTIS = Compact indoor stretch
CPTOS = Compact outdoor stretch
SIZE
32 = 32"
42 = 42"
46 = 46"
49 = 49"
55 = 55"
LUMINANCE
05 = 500cdl
07 = 700cdl
10 = 1000cdl
12 = 1200cdl
15 = 1500cdl
VERSION
LS = Landscape SingleSide
LD = Landscape DoubleSide
PS = Portrait SingleSide
CORE
CT = CCTV
P1 = MIO 5251- J1900 4GB RAM 32GB SSD
GLASS
M4 = Monolithic 4mm
M5 = Monolithic 5mm
M6 = Monolithic 6mm
L3 = Laminated 3+3
L4 = Laminated 4+4
GLASS TREATMENT
AG = Anti – Glare
AR = Anti – Reflective 2 side
ARI = Anti – Reflective 2 side and IR filter
SUN COVER
Z0 = Basic Sun Cover
Z1÷Z9 = Custom Sun Covers
Accelerometer
blank = without Acceleormeter
C = with Acceleormeter
ANTENNA
blank = without ANTENNA
A = with ANTENNA
TTS ACTIVATION
B = Push-button input
PF = PMR module French version
PS = PMR module Spanish version
AUDIO TTS
blank = without TTS
TTS = with TTS
DIAGNOSTIC MODE
blank = default
W = Wi-Fi connection
RADIO COMMUNICATION
blank = without radio communication
4G1 = Modem 4G mini-PCIE SIM COM Europe (11069046)
4G2 = Modem 4G mini-PCIE SIM COM South-America (11069055)
Storage
blank = nothing
S1 = extern SSd 256GBSD
S2 = ex extern SSd 512GBSD
Heater
blank = nothing
H = Heater
CABLED COMMUNICATION
E = Ethernet 10/100/1000
O1 = Multi-mode Fiber Optic Converter 10/100
O2 = Multi-mode Fiber Optic Converter 10/100/1000



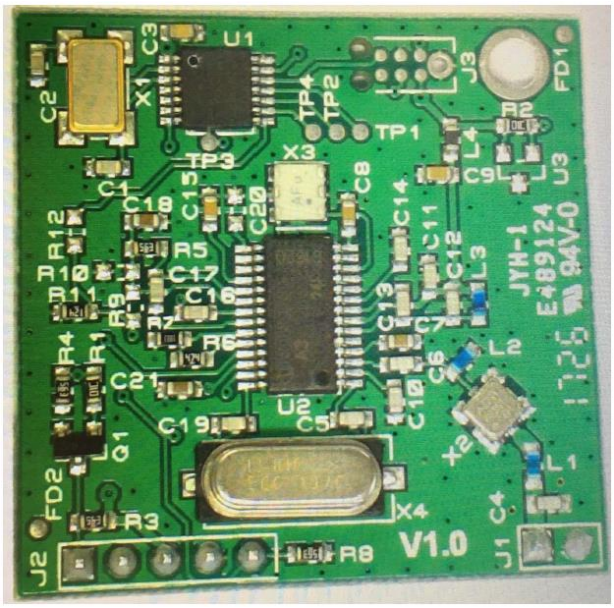
RADIO MODULE - - TECHNICAL DATA DECLARED BY THE MANUFACTURER

Simcom SIM7100E

General features	**Specifications for Data transfer**
Five-Band FDD-LTE B1/B3/B7/B8/B20 Dual-Band TDD-LTE B38/B40 Dual-Band UMTS/HSDPA/HSPA+ B1/B8 Dual-Band GSM/GPRS/EDGE 900/1800 MHz Control Via AT Commands Supply voltage range: 3.4V~ 4.2V Operation temperature: -40℃ to +85℃ Dimension: 30 X 30X 2.9 mm Weight: 5.8g GNSS: gpsOne Gen 8B;standalone;assisted,XTRA;	LTE •Uplink up to 50Mbps •Downlink up to 100Mbps HSPA+ •Uplink up to 5.76 Mbps •Downlink up to 42 Mbps UMTS •Uplink/Downlink up to 384Kbps EDGE Class: •Max. 236.8Kbps(DL),Max. 236.8Kbps(UL) GPRS •Max. 85.6Kbps(DL), Max. 85.6Kbps(UL) CSD •GSM data rate 14.4Kbps •WCDMA data rate 57.6Kbps •WCDMA 64kbps CSD for Video call
Other features	**Interfaces**
USB Driver for Microsoft Windows2000/XP/Vista/7/8 USB Driver for Windows CE/Mobile USB Driver for Linux /Android RIL supporting for Android/Windows CE/Mobile Automatic installation for windows Linux API SDK Firmware update via USB TCP/IP/IPV4/V6 Multi-PDP,MT PDP FTP/FTPS/HTTP/HTTPS/SMTP/POP3/DNS/MMS DTMF Gobi SDK to the Win7/Win8/Linux MBIM to Win8 Source code of the PC manager of the device for reference	USB2.0 UART SIM card SPI I2C Keypad(5*5) Constant current sink GPIO ADC PCM SDIO

RADIO MODULE - - TECHNICAL DATA DECLARED BY THE MANUFACTURER

ASK Radio Receiver - NF S32-002



Power supply
Module must be powered with +5VDC +/-10%.
An input low pass filter with R = 10 Ohms and C = 1µF can be used to reduce module power supply ripple.

Power consumption
Active power consumption is typically 6mA at 5V / +25°C, and maximum 8mA over full temperature range.
Power down power consumption if typically 1mA @25°C, and maximum 1.5mA over full temperature range.

Temperature
Module can be used under industrial -40°C / +85°C range.

Signals
ENABLE input must be tied high to set module in active mode. An internal 47 KOhms pull-down resistor is used on this input. Input voltage on this pin must be under 0.7V to ensure power-down, above 3.5V to ensure powerup, and must not exceed VCC+0.2V.
TRIG_OUT output goes low for 750ms when a valid radio signal is received. Most remote controls tested send multiple frames to ensure transmission, so output active time duration can be increased by the length of frames received. The TRIG_OUT stage consists in a small bipolar transistor coupled with a 47 KOhms pull-up resistor to VCC.
If application requires an open collector output without pull-up to VCC, the R3 resistor can be unsoldered (placed close to the TRIG_OUT pin). In this case Vceo max voltage must not exceed 40V and current drawn must be lower than 50mA. Take care avoiding noisy signals (switching power supplies, high speed logic, radio transmitters) running close to the receiver.

Radio characteristics
ASK receiver
Module is compliant with NF S32-002 specifications. Nominal center frequency : 868.3 MHz.

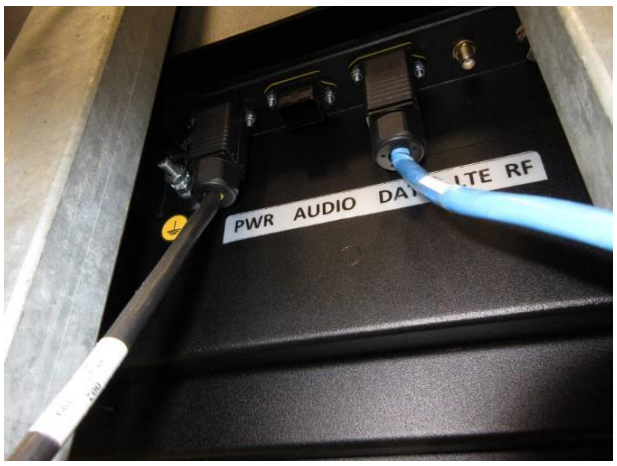
Frame decoding
Module frame decoding is ensured by a microcontroller clocked by a crystal. Module tolerates transmitter framing clock deviation over +/-5% range (most remote controls use an unprecise clock). Noise rejection is ensure by an algorithm that validates signal after decoding a minimum number of contiguous frame repetitions.

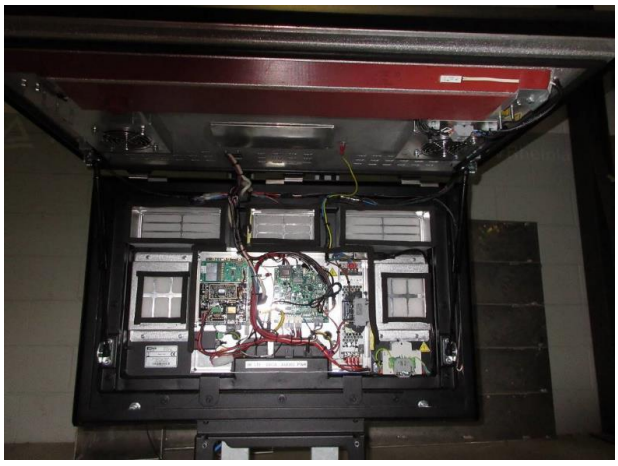
COMPONENTI AUSILIARI / *ANCILLARY EQUIPMENTS*		
Description	**Manufacturer**	**Model name**
RADIO TEST SET	R&S	CMW500
Remote control	Aesys	---

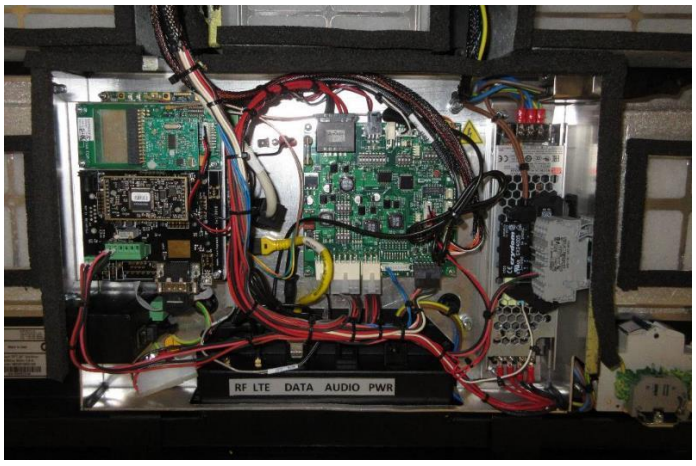
INTERFACE PORTS				
Port	**Description**	**Connection**	**Shielded**	**Cable length**
Enclosure	Conductive surface	Closed by screws	---	---
AC Power Port	Main Input	Input 230V 50/60Hz (Phase/Neutral with protective earth)	No	---
DC Power Port	Port not present			
Analogue/digital data ports	---	Port not present	No	<3m.
Wired Network port	Ethernet data line	RJ45 connector	Yes	>3mt
*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port (Not Involved in Process Control) TP = Telecommunication Ports				

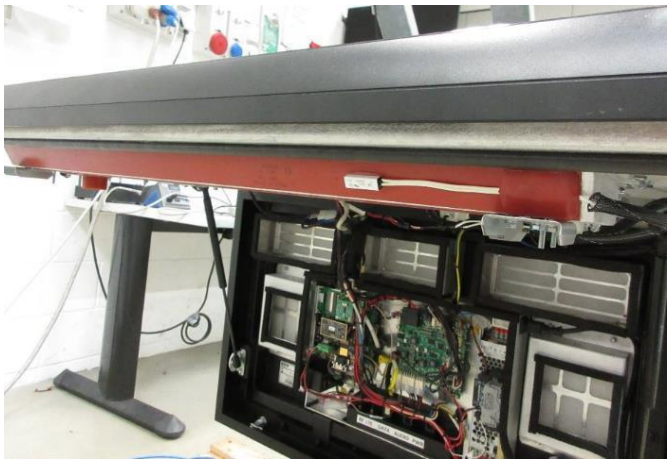
REFERENCE STANDARDS		
Reference Document	**Year**	**Title of Document**
EN IEC 62311	2020	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0Hz-300GHz)
COUNCIL RECOMMENDATION 1999/519/EC	1999	COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)

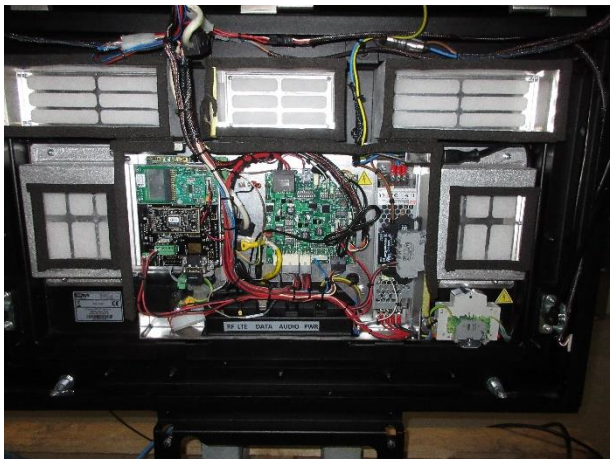
PHOTOGRAPHIC DOCUMENTATION

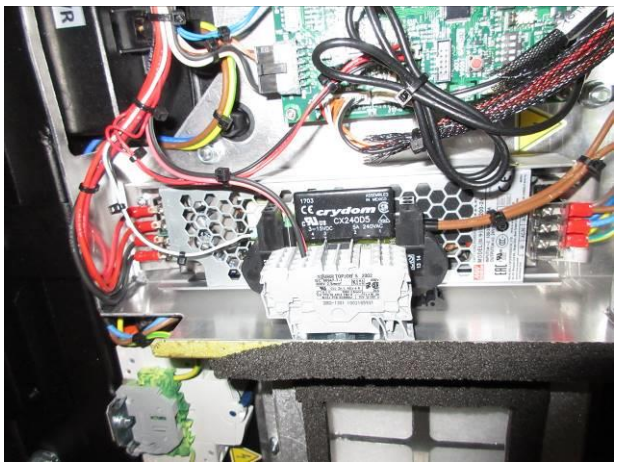

PWR AUDIO

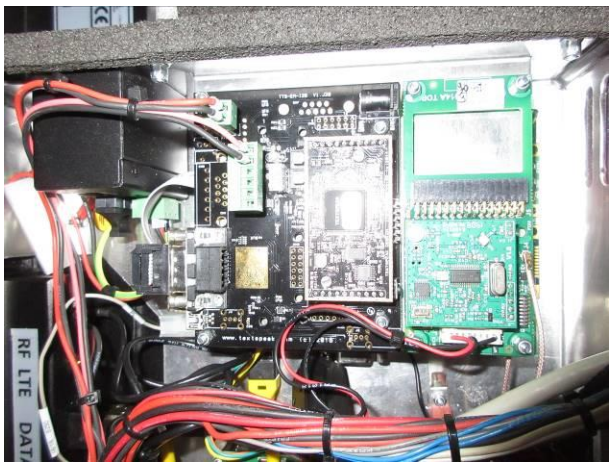



RF LTE DATA AUDIO PWR

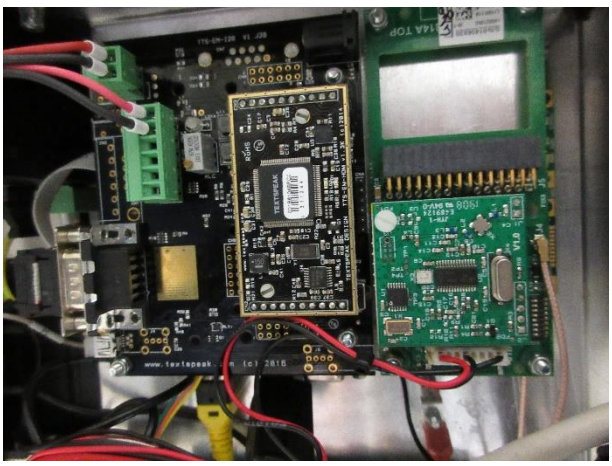




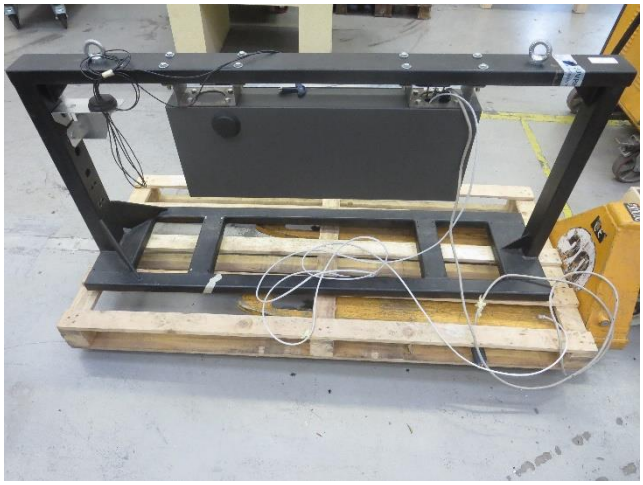

crydom
CX2405

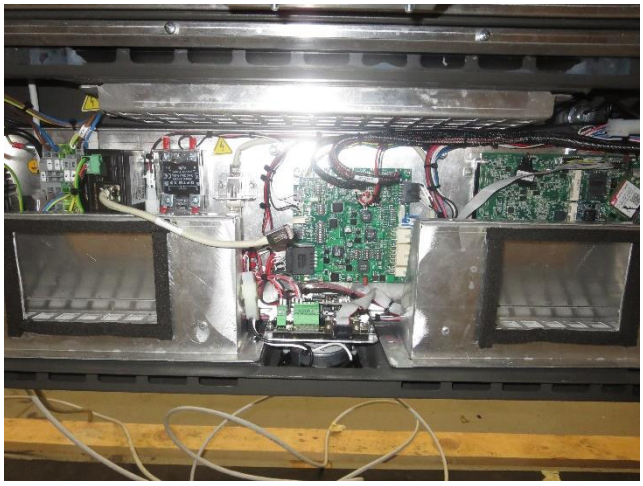

RF LTE

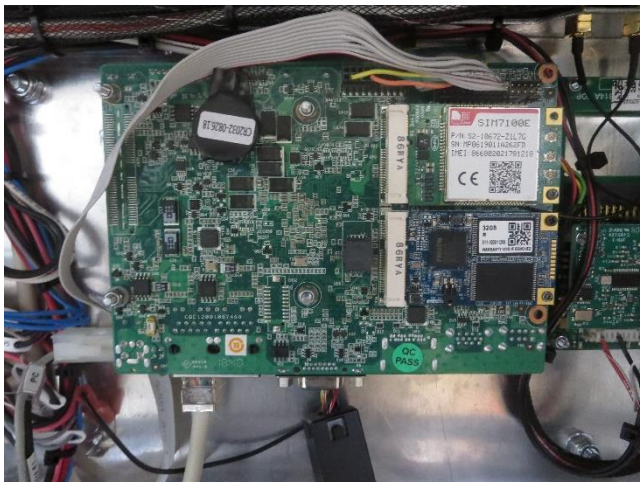
UI2
UCHIYA
110C
3
164



PHOTOGRAPHIC DOCUMENTATION







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GENERAL DESCRIPTION OF APPLIED STANDARD:

EN 62311 Generic Standard to demonstrate the compliance of electronic and electrical apparatus with the basic restrictions related to human exposure to electromagnetic field (0Hz to 300GHz) is to demonstrate the compliance of apparatus with the basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields as well as induced and contact current.

LIMIT

According to EN 62311, the criteria listed in the below table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in the table 2 of Council Recommendation 1999/519/EC.

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m²)
0-1 Hz	—	$3{,}2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3{,}2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1{,}375\ f^{1/2}$	$0{,}0037\ f^{1/2}$	$0{,}0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Notes:

[1]: f as indicated in the frequency range column

[2]: for frequencies between 100kHz and 10GHz, S_{eq}, E^2, H^2, and B^2, are to be averaged over any six-minuted period.

[3]: for frequencies exceeding 10 GHz, S_{eq}, E^2, H^2, and B^2, are to be averaged over any $68/f^{1.05}$ minute period (f in GHz)

[4]: No E-field value is provided for frequencies < 1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

VALUTATION OF COMPLIANCES

Far Field Power flux Calculation model.

This model is applicable in the far-field region and over-estimates in the radiating near-field region. The far-field calculations are accurate when the distance, , from an antenna of length to a point of investigation is greater than

$$r = \frac{2D^2}{\lambda}$$

The Power Flux is

$$S = \frac{PG}{4\pi r^2} \quad \text{or equivalent} \quad S = \frac{EIRP}{4\pi r^2}$$

where
P = input power of the antenna
G = antenna gain relative to an isotropic antenna
r = distance from the antenna to the point of investigation.
EIRP = Effective Isotropic Radiated Power

RESULT (GSM mode, worst case)			
CH	**TX Frequency (MHz)**	**Max. Radiated Power (dBm)**	**Antenna Gain (dBi)**
62	902.48	+28.2	---
MAXIMUM PERMISSIBLE EXPOSURE (MPE)			
Evaluation Distance (m)		0,2 (1)	
Power density at evaluation distance (W/m²)		1.314	
Power density Limit (W/m²)		4.512	
VERDICT			
The EUT Radiated Power density at evaluation distance is WHITIN THE LIMIT			
MIN Safety Distance (m)			
0.108			
(1) Typical installation distance from human body declared by the manufacturer			

END OF TEST REPORT